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Ant Larvae of the Subfamily Myrmeciinae

(Hymenoptera: Formicidae)

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Emery (1911) and Wheeler (1922) placed the genus *Myrmecia* in the tribe Myrmeciini of the subfamily Ponerinae. Clark (1951) with Brown (1954) concurring raised the tribe to subfamily rank, Myrmeciinae.

The genus *Myrmecia* occurs only in Australia and New Caledonia and comprises between 65 (Brown and Taylor, 1970) and 96 (Clark, 1951) species. The workers range in length from 4 mm to 36 mm. The larger species are called bulldog ants because of "the vicious way they attack and the tenacity with which their huge jaws hang on to their victim. All the workers and females are provided with a large sting with which they inflict a severe and painful wound. A burning sensation accompanied by redness and swelling may be felt at the wound some time afterwards and may last several days" (Clark 1951: 18).

The Myrmeciinae are generally regarded as the most archaic of living ants. Brown (1954: 22–23) divided them into three tribes of one genus each: Prionomyrmecini, *Prionomyrmex* from the Baltic Amber (Oligocene); Nothomyrmeciini, *Nothomyrmecia*, one species (only two specimens known) from Western Australia, which "appears to satisfy nearly all conditions demanded of an ancestral stock leading to the *Dolichoderinae* and *Formicinae*"; and Myrmeciini, *Myrmecia*.

In our previous papers (1952, 1964) we have treated *Myrmecia* as a ponerine. Now we are convinced that it should be in a separate subfamily, the Myrmeciinae. In 1952 we described the larvae of two species (*M. gulosa* and *M. sanguinea*). In this paper we describe the larvae of 28 additional species. For all of this new material we are deeply indebted to the Rev. Bede B. Lowery, Head Master of St. Ignatius School, Norwood, South Australia. Rev. Lowery's gift renders *Myrmecia* the largest genus in our collection except *Camponotus*. Since *Camponotus* is the largest genus of ants (about 600 species), our 60 species constitute only 10%; but our 30 species of *Myrmecia* are either 42% or 31% of the genus.

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Genus Myrmecia Fabricius

Not differentiated into neck and body; elongate and terete; anterior half strongly curved ventrally. Integument tough. Body hairs simple or denticulate. Head hairs few, simple and slightly curved; about as many sensilla as hairs on head. Clypeus granulose. Labrum small and short; posterior surface with spinules usually isolated and rather large and with sensilla of various sizes. Mandibles stout and subtriangular; heavily sclerotized; basal half usually bearing isolated spinules. Maxillary spinules usually rather large and isolated. Labium with spinules usually large and isolated; with dorsal transverse densely and coarsely spinulose ridge; each palp a slightly elevated cluster of sensilla; opening of sericteries wide and salient. Hypopharynx without spinules.

The following revised description of *M. gulosa* is our standard: *all other species are compared with it.*

Myrmecia gulosa Fabricius

Length[1] about 25 mm. Elongate, terete and slender; diameter greatest at AV and VI, diminishing gradually toward strongly ventrally curved anterior end; posterior half stout; posterior end broadly rounded; lateral longitudinal welt well developed. Anus ventral. Leg vestiges moderately large. Segmentation distinct, 10 differentiated somites. Integument of venters of TI and TII spinulose. Body hairs simple, slightly curved, short (0.06–0.2 mm long), uniformly distributed and moderately abundant. Head very small, subpyriform in anterior view; cranium subovoidal in anterior view, with numerous minute sensilla irregularly scattered over surface. Head hairs very few, minute (about 0.03 mm long), simple. Antennae mounted on low bulges; small; with 3 sensilla each. Labrum small and short; breadth twice the length; strongly bilobed due to wide median incision of ventral border; anterior surface of each half with about 12 sensilla and two or three minute hairs; posterior surface sparsely spinulose, spinules rather large and usually isolated; each half of posterior surface with about 12 sensilla of various sizes. Mandibles large; each subtriangular in anterior view; heavily sclerotized apically; apical tooth sharp-pointed and slightly curved posteriorly; medial teeth smaller, sharp-pointed and directed ventromedially; basal half of anterior surface with rather coarse spinules, these usually isolated; apical half with longitudinal striae on anterior and posterior surfaces. Maxillae lobose, narrowly round-pointed and with apical half spinulose; each palp a frustum with two apical, two subapical and one lateral sensilla; each galea a stout cone with two apical sensilla. Labium subhemispherical; anterior surface spinulose, the spinules rather large and isolated; a large densely and coarsely spinulose transverse welt posteriorly; each palp a rounded knob with five sensilla; opening of sericteries wide and salient. Hypopharynx without spinules. (Material studied: 12 larvae from New South Wales.)

Myrmecia arnoldi Clark

Length about 25 mm. Body hairs slightly longer (0.09–0.24 mm long). Head hairs longer (0.04–0.08 mm long). Mandibles without spinules on anterior surface. Maxillary palps each with four apical and one lateral sensilla. (Material studied: one larva from Western Australia.)

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[1] All of these larvae are measured from the mouth, through the line of spiracles to the anus.

MYRMECIA BREVINODA Forel

Length about 23 mm. Head hairs longer (0.036–0.072 mm long). Labrum with length ¾ the breadth. Maxillary palp with one apical, three lateral and one subbasal sensilla.

Very Young Larva.—Length about 4.8 mm. Shape similar to mature larva. First abdominal spiracle about 3 times as large as remainder. Integument with numerous denticles 0.11–0.32 mm long, and few minute spinules on venter of each somite. Body hairs 0.018–0.11 mm long. Head hairs 0.036–0.072 mm long, with tips simple or minutely spinulose. Mandibles with teeth relatively longer and more slender. Each maxillary palp a rounded mound; each galea a short stout peg. Each labial palp represented by cluster of five sensilla. Opening of sericteries a depressed transverse slit.

Material studied: numerous larvae from New South Wales.

MYRMECIA CHASEI Forel

Length about 20 mm. Stouter. Entire integument spinulose or rugulose. Body hairs 0.06–0.43 mm long. Head hairs longer (0.06–0.12 mm long). Mandibles without spinules on anterior surface. Maxillae entirely spinulose; each palp a round-tipped conoid with four apical and one lateral sensilla. (Material studied: 6 larvae from Western Australia.)

MYRMECIA CLARKI Crawley

(Figs. 1, 2)

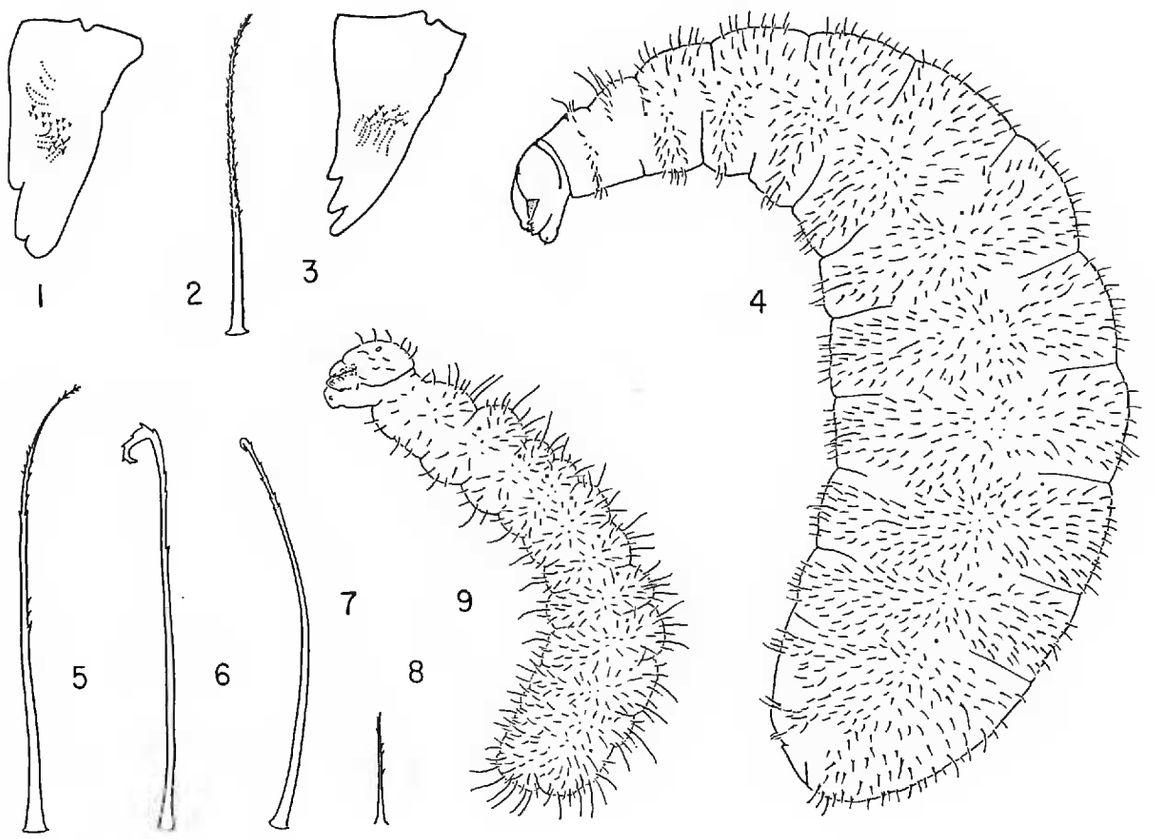
Length about 10 mm. Stouter. Integument of ventral surfaces of anterior somites with rather coarse spinules in short arcuate rows and of dorsal surfaces of posterior somites with minute spinules in short arcuate rows. Body hairs sparse, 0.03–0.35 mm long, finely denticulate and feebly flexuous. Head hairs about 0.05 mm long; very finely denticulate. Mandibles with teeth all reduced to rounded stumps; anterior surface with fewer spinules. Maxillae entirely spinulose. Opening of sericteries wide and salient from bottom of a trough. (Material studied: six larvae from Western Australia.)

MYRMECIA COMATA Clark

Length about 15.5 mm. Venter of thorax with numerous spinules in short arcuate rows. Body hairs longer (0.075–0.41 mm long) and of two types: (1) simple; (2) with few minute denticles near tip. Cranium more nearly circular; entire head less pear-shaped. Head hairs longer (0.054–0.08 mm long). Mandibles with teeth larger; each apical tooth more slender and tip more hooked. Galeae longer. (Material studied: six larvae from New South Wales.)

MYRMECIA DIXONI Clark

Length about 9.6 mm. Not so slender; posterior end more rounded; entire body more curved. Integument of venters of thorax and AI, II, IX and X with spinules in short transverse rows. Body hairs less numerous, longer (0.075–0.53 mm long), with denticles. Head with occipital outline flatter; widest above antennal level. Posterior surface of labrum with spinules fewer, smaller and arranged in short



FIGS. 1 and 2. *Myrmecia clarki*. FIG. 1. Left mandible in anterior view, ×160. FIG. 2. Body hair, ×267. FIG. 3. *M. elegans* left mandible in anterior view, ×128. FIGS. 4–9. *M. fulvipes*. FIG. 4. Larva in side view, ×19. FIGS. 5 and 8. Two denticulate body hairs, ×183. FIGS. 6 and 7. Two views of a hooked hair, ×183. FIG. 9. Side view of a very young larva, ×19.

arcuate rows. Mandiblar teeth longer and more slender. Each maxillary palp with three apical, one subapical and one lateral sensilla. Labium with border between the palps flatter; each palp a low knob with five sensilla. (Material studied: three larvae from New South Wales.)

MYRMECIA ELEGANS Clark

(Fig. 3)

Length about 9.6 mm. Stouter. Integument of ventral surfaces of anterior somites and dorsal surfaces of posterior somites with spinules in short transverse rows. Body hairs few, short to long (0.06–0.54 mm), finely denticulate, tip highly varied (clubbed, spatulate, short-bifid or tapered). Head capsule more nearly circular. Head hairs fewer and longer (0.03–0.09 mm long). Mandibles with teeth stouter and round-pointed; fewer spinules on anterior surface. Each labial palp a slight elevation with five sensilla. (Material studied: three larvae and one semipupa.)

MYRMECIA FORCEPS Roger

Immature Larva.—Length about 11 mm. Entire integument spinulose, spinules larger and more numerous on venters of anterior somites and dorsa of posterior somites. Body hairs 0.01–0.32 mm long, very finely denticulate. Head with straight

sides. Head hairs longer (0.025–0.065 mm long). Mandibles without spinules. Each maxillary palp with four apical and one lateral sensilla; galeae digitiform. Each labial palp a cluster of four sensilla; opening of sericteries a wide slit in trough. (Material studied: eight larvae from South Australia.)

MYRMECIA FORFICATA Fabricius

Length about 2 mm. The middorsa of TII and TIII each with transverse welt, which extends to level of spiracles. Entire integument of most somites with minute spinules, isolated or in short transverse rows. Body hairs sparse, slightly longer (0.052–0.3 mm long), with numerous minute denticles. Anterior surface of each half of labrum with two or three hairs (about 0.018 mm long) and about 20 sensilla on or near ventral border. Mandibles with teeth wider and longer. Each maxillary palp a short peg with four apical and one lateral sensilla. Each labial palp a small knob with five sensilla. (Material studied: numerous larvae from New South Wales.)

MYRMECIA FUCOSA Clark

Length about 9.2 mm. Thorax and AI more curved; remainder of abdomen more swollen, with venter flatter and dorsal surface more nearly C-shaped. Integument of venters of thorax and AI–IV and dorsa of AI–X with minute spinules in short arcuate rows. Body hairs sparser, longer (0.075–0.45 mm long), flexuous and with minute denticles. Anterior surface of each half of labrum with two minute hairs and about 17 sensilla on or near ventral border. Each maxillary palp with three apical and two lateral sensilla. (Material studied: seven larvae from South Australia.)

MYRMECIA FULVIPES Roger

(Figs. 4–9)

Length about 11 mm. Abdomen much stouter and shorter, diameter greatest at AIV and V, tapering gradually to more narrowly rounded posterior end. Integument of venters of anterior somites and AIX and entire integument of AX with minute spinules in short transverse rows. Body hair sparser and with numerous denticles. Cranium with occipital outline flattened. Antennae larger and near mouth parts. Each mandible with apical tooth narrower and medial teeth larger. Each maxillary palp with four terminal and one lateral sensilla; galeae digitiform.

Young Larva.—Length about 5 mm. Similar to mature larva except in following details. Spiracles of thorax only ⅔ diameter of those on abdomen. Body hairs of two types: (1) 0.012–0.3 mm, denticulate, on all somites; (2) 0.09–0.18 mm, uncinate, with hook and apical portion of shaft minutely denticulate, on AVII–X. Antennae smaller. Each maxillary palp a cluster of five sensilla; opening of sericteries a transverse slit.

Very Young Larva.—Length about 4 mm. Similar to young larva except in following details. Body of nearly uniform diameter. Body hairs (1) 0.09–0.22 mm; (2) 0.11–0.22 mm. Head capsule subhexagonal with corners rounded. Head hairs 0.015–0.06 mm. Labrum with smaller spinules.

Material studied: numerous larvae from New South Wales and Australian Commonwealth Territory.

MYRMECIA GRACILIS Roger

Length about 18 mm. AIX bearing gonopod vestiges. Integument of thorax and AI–II bearing minute spinules. Body hairs of two types: (1) 0.038–0.38 mm long, with minute denticles near tip, on all somites; (2) 0.032–0.41 mm long, with bifid tip and with minute denticles apically. Head hairs 0.024–0.11 mm long, denticulate. Mandibles more slender apically. Each maxillary palp a frustum with four apical and one subapical sensilla; galeae digitiform. (Material studied: nine larvae from South Australia.)

MYRMECIA GRATIOSA Clark

Length about 11 mm. Body hairs 0.025–0.35 mm long, very finely denticulate. Head hairs 0.01–0.09 mm long, simple. Each maxillary palp a round-tipped peg, with four apical and one lateral sensilla. (Material studied: three larvae from Western Australia.)

MYRMECIA HARDERI Forel

Length about 13 mm. Stouter. Gonopod vestiges on AIX–X. Integument of venters of anterior somites and dorsa of posterior somites with spinules in transverse rows. Body hairs sparser and longer. Of two types: (1) 0.035–0.53 mm long, minutely denticulate, the longer with numerous denticles; (2) about 0.019 mm long, a few on abdominal somite X, with denticulate uncus. Head capsule nearly circular. Head hairs longer (0.036–0.1 mm long). Anterior surface of each half of labrum with two hairs and about 13 sensilla. Mandibles with stouter teeth and fewer spinules and striae. Each maxillary palp a frustum with four apical and one lateral sensilla; galeae digitiform.

Very Young Larva.—Length about 3 mm. Denticulate body hairs 0.009–0.18 mm long; uncinate hairs 0.15–0.23 mm long, few on each AIV–X. Mandibular teeth narrower and sharper. Each maxillary palp a low knob with five sensilla. Labium feebly bilobed; each palp a cluster of five sensilla; opening of sericteries a depression. Hypopharynx with minute spinules in short transverse rows.

Material studied: 13 larvae from Queensland.

MYRMECIA LUCIDA Forel

Semipupa.—Length about 13.5 mm. Integument of venters of anterior somites and dorsa of posterior somites with few spinules in short rows. Body hairs fewer, 0.04–0.36 mm long. Each mandible with apical tooth more curved, medial teeth stouter and blunter. Each maxillary palp with four apical and one lateral sensilla. Labium with much larger spinules basally. (Material studied: one semipupa from Western Australia.)

MYRMECIA MICHAELSENI Forel

Immature Larva.—Length about 10.8 mm. Stouter. Body hairs less numerous, length 0.025–0.35 mm. Head more rounded. Head hairs longer (0.027–0.75 mm long). Mandibles with teeth stouter and round-pointed. Maxillae entirely spinulose; each palp with four apical and one lateral sensilla. (Material studied: one larva from Western Australia.)

MYRMECIA MURINA Clark

Length about 17.7 mm. Stouter. Entire integument spinulose. Body hairs fewer, 0.01–0.4 mm long, minutely denticulate. Head hairs 0.013–0.025 mm long, simple. Each maxillary palp with four apical and one lateral sensilla; galeae digitiform. (Material studied: 17 larvae from Australian Commonwealth Territory.)

MYRMECIA NIGROCINCTA F. Smith

Length about 9.7 mm. Gonopod vestiges on AVII–IX. Integument of venters of anterior somites and dorsa of posterior somites with minute spinules in transverse rows. Cranium subhexagonal in anterior view. Head hairs 0.038–0.075 mm long, simple. Anterior surface of mandibles with more striae and fewer spinules. Each maxillary palp a short peg with four apical and one lateral sensilla; galeae digitiform.

Young Larva.—Length about 4.7 mm. Similar to mature larva except in following details. Body hairs 0.014–0.15 mm long, with denticles. Cranium with occipital border concave. Mandibles with longer and more sharply pointed teeth; anterior surface with minute spinules, striae feeble. Each maxillary palp a short cone with three apical and two lateral sensilla; each galea a frustum. Each labial palp a slightly raised cluster of five sensilla; opening of sericteries a slit in depression.

Material studied: numerous larvae from New South Wales.

MYRMECIA PICTA F. Smith

Length about 10.6 mm. Stouter. Gonopod vestiges on AVII–IX. Integument of venters of anterior somites and dorsa of posterior somites with minute denticles in short transverse rows. Body hairs sparser and longer (0.019–0.41 mm long), each with few minute denticles near apex. Head with occipital border flatter. Head hairs about ¼ as numerous, 0.018–0.1 mm long, with few minute denticles near apex. Mandibles with fewer and weaker striae. Each maxillary palp with four apical and one lateral sensilla. Labium with smaller spinules; each palp a slightly raised cluster of five sensilla.

Very Young Larva.—Length about 4.9 mm. Similar to mature larva except as follows. Body hairs 0.09–0.38 mm long, with numerous minute denticles. Maxillary palp a low knob with three apical and two lateral sensilla. Opening of sericteries a depressed slit on labium.

Material studied: 11 larvae from New South Wales.

MYRMECIA PILIVENTRIS F. Smith

Young Larva.—Length about 8 mm. Integument of venters of anterior somites and dorsa of posterior somites with minute spinules in short transverse rows. Body hairs sparser and longer. Of two types: (1) 0.045–0.27 mm long, with simple shaft and rather numerous minute denticles apically, on all somites; (2) 0.036–0.063 mm long, uncinate and with minute denticles, thin in plane of hook and wide perpendicular to that plane. Occiput flatter. Head hairs longer (0.027–0.72 mm long). Mandibles with teeth more acute and closer together. Each maxillary palp a short cone with three apical and two lateral sensilla; galeae digitiform. Each labial palp a slightly raised cluster of five sensilla. Opening of sericteries a transverse slit in slight depression.

Very Young Larva.—Length about 2 mm. Similar to young larva except as follows. Body hairs of two types: (1) 0.018–0.216 mm long, denticulate, on all somites; (2) about 0.16 mm long, uncinate, on AVI–X, more numerous posteriorly.

Material studied: numerous larvae from New South Wales.

The young and very young larvae are clumped with their posterior ends in contact and held together by the uncinate hairs. It is impossible to pry them apart with needles.

Myrmecia piliventris femorata Santschi

Length about 12 mm. Entire integument spinulose, spinules minute and isolated or in short rows. Body hairs 0.025–0.35 mm long, stout, with numerous denticles. Head hairs simple, 0.036–0.054 mm long. Each mandible with apical tooth longer and more slender and medial teeth larger. Each maxillary palp a slender skewed peg, with three apical and two lateral sensilla; galeae digitiform. (Material studied: five larvae from Australian Commonwealth Territory.)

Myrmecia pilosula F. Smith

Length about 12.5 mm. Slightly stouter and shorter. Entire integument spinulose, spinules minute and isolated or in short rows. Body hairs sparser and longer (0.025–0.45 mm long), with minute denticles. Occipital outline flatter. Head hairs 0.037–0.072 mm long, simple or with minute denticles. Mandibles with teeth longer and stouter. Each maxillary palp a tall cylinder with four apical and one lateral sensilla; galeae digitiform. Labial palp a short peg with five apical sensilla.

Young Larva.—Length about 2.7 mm. Similar to mature larva except in following details. Thoracic spiracles ⅓ diameter of abdominal spiracles. Integument with minute spinules, most abundant on AX and venter of thorax, more scattered elsewhere. Body hairs of two types: (1) 0.009–0.18 mm long, denticulate, on all somites except AX; (2) 0.054–0.18 mm long, on AIV–X, increasing in number posteriorly. Each maxillary palp a frustum; galeae shorter.

Very Young Larva.—Length about 2.4 mm. All spiracles minute. Entire integument of posterior somites with minute isolated spinules, venters of anterior somites with minute spinules in short transverse rows. Body hairs of two types: (1) 0.018–0.2 mm long, with minute denticles, on all somites except AX; (2) 0.054–0.18 mm long, uncinate and denticulate, increasing in number posteriorly. Labrum not deeply bilobed; posterior surface with spinules relatively smaller and not so numerous. Mandibular spinules minute. Maxillary spinules minute; each palp a low knob with five sensilla; each galea a slight elevation with two sensilla. Labial spinules shorter, many isolated; each palp a cluster of five sensilla; opening of sericteries a short depression. Hypopharynx with minute scattered spinules.

Material studied: numerous larvae from New South Wales and South Australia.

Myrmecia pyriformis F. Smith

The name *M. sanguinea*, which we used in 1952 (p. 112) and 1964 (p. 444), is a synonym of *M. pyriformis* (Clark, 1951).

Revision.—Entire thoracic integument spinulose; spinules few and minute dorsally becoming more numerous and in transverse rows ventrally. Body hairs fewer

and shorter (0.037–0.175 mm long). Each maxillary palp taller and with four apical and one lateral sensilla; each galea digitiform. Each labial palp with slight constriction near base. (Material studied: the thorax and attached heads of three larvae from New South Wales.)

Myrmecia simillima F. Smith

Length about 35 mm. Gonopod vestiges on AIX. Integument with minute spinules in short transverse rows on all surfaces of AX, on dorsa of other posterior somites and on venters of anterior somites. Body hairs fewer and longer (0.036–0.5 mm long), with minute denticles. Head hairs longer (0.038–0.11 mm long). Mandibles with teeth longer and closer together. Each maxillary palp a short cone with one apical, two subapical and two lateral sensilla; galeae digitiform. Each labial palp a short peg with five sensilla. Hypopharynx with few short transverse rows of minute spinules.

Young Larva.—Length about 17.6 mm. Similar to mature larva except in following details. TII with transverse welt across the dorsum from spiracle to spiracle. Entire integument spinulose, spinules minute but more numerous and larger anteriorly and ventrally. Each maxillary palp a frustum with four apical and one lateral sensilla.

Very Young Larva.—Length about 8.3 mm. Very similar to young larva except in following details. Thoracic spiracles about half diameter of abdominal spiracles. Venters of somites with minute spinules in short rows, more prominent anteriorly. Body hairs of two types: (1) 0.015–0.45 mm long, with few minute denticles, on all somites; (2) about 0.19 mm long, uncinate and flattened, with denticles in plane of uncus. Each maxillary palp a frustum with three apical and two lateral sensilla. Labium with spinules minute; each palp a slight elevation; opening of sericteries a transverse slit in depression.

Material studied: numerous larvae from New South Wales.

One of our specimens of *M. simillima* measures 35 mm in length and is the largest ant larva we have seen; its volume is about 350 mm^3. We do not have a preserved larva of the largest known ant, *Dinoponera grandis*, but as far as we can estimate from a tattered integument, that larva has a volume of about 400 mm^3.

Myrmecia swalei Crawley

Immature Larva.—Length about 8.8 mm. Stouter. Integument of venters of anterior somites and dorsa of posterior somites spinulose. Body hairs less numerous, 0.05–0.3 mm long, with numerous minute denticles. Cranium more rounded. Head hairs 0.013–0.05 mm long, simple. Mandibles with teeth stouter and round-pointed; with fewer spinules. Maxillae entirely spinulose; each palp with four apical and one lateral sensilla; galeae digitiform. (Material studied: one larva from Western Australia.)

Myrmecia tepperi Emery

Length about 11.5 mm. Stouter. Integument with spinules in short rows on all surfaces of AX and on venters of anterior somites. Body hairs 0.05–0.45 mm long,

with fine denticles. Head hairs longer (0.036–0.072 mm long). Maxillae with most of anterior surface of each stipes covered with coarse isolated spinules; each palp digitiform, with four apical and one lateral sensilla.

Very Young Larva.—Length about 3.6 mm. Similar to mature larva except as follows. Entire integument minutely spinulose, spinules most prominent on AX and on venter of TI. Cranium subhexagonal with all corners rounded. Mandibles straighter, with teeth long, slender, straight and directed ventrally. Maxillae with spinules minute and in short rows on apex; each palp a low knob with four apical and one lateral sensilla; each galea a short cone. Each labial palp a slightly raised cluster of five sensilla; opening of sericteries a transverse slit in depression. Hypopharynx with few minute spinules.

Material studied: numerous larvae from New South Wales.

Myrmecia urens Lowne

Length about 7.3 mm. Gonopod vestiges on AIX. Entire integument spinulose, spinules minute and mostly isolated but in short rows on AX and on venters of anterior somites. Cranium with occipital outline flatter. Mandibles bearing few striae, teeth more prominent and closer together. Each maxillary palp a skewed peg with one apical, two subapical and two lateral sensilla.

Young Larva.—Length about 3.3 mm. Similar to mature larva except as follows. Thoracic spiracles about ½ diameter of abdominal spiracles. Mandibular teeth slender and very acute.

Material studied: 14 larvae from New South Wales.

Myrmecia varians Mayr

Immature Larva.—Length about 9.2 mm. Gonopod vestiges on AIX. Integument with spinules on all surfaces of AX and on venters of anterior somites. Body hairs less numerous and longer (0.025–0.51 mm long), with short denticles; hairs mostly short, but with ring of the longer hairs around middle of each somite. Mandibles with notably larger teeth. Each maxillary palp a short cone with four apical and one lateral sensilla; galeae digitiform. Each labial palp a slight elevation with five sensilla.

Very Young Larva.—Length about 4.3 mm. Similar to mature larva except in following details. Body hairs shorter (0.018–0.3 mm long). Mandibles with teeth narrow and more acute.

Material studied: 15 larvae from New South Wales.

Myrmecia vindex F. Smith

Length about 21 mm. Integumentary structures of unknown nature and function on each ventrolateral surface of each abdominal somite; minute spinules in short transverse row on venters of anterior somites. Body hairs fewer, 0.06–0.3 mm long, minutely denticulate. Head hairs very few, longer (0.03–0.09 mm long). Mandibles with stouter teeth; spinules fewer and smaller. Maxillae with apex narrower; each palp a round-topped peg, with four apical and one lateral sensilla. Labium with fewer and smaller spinules. (Material studied: one larva from Western Australia.)

Myrmecia wilsoni Clark

Semipupa.—Length about 12 mm. Stouter. Body hairs finely denticulate, of two types (with few intergrades): (1) short (0.035–0.1 mm long), generally dis-

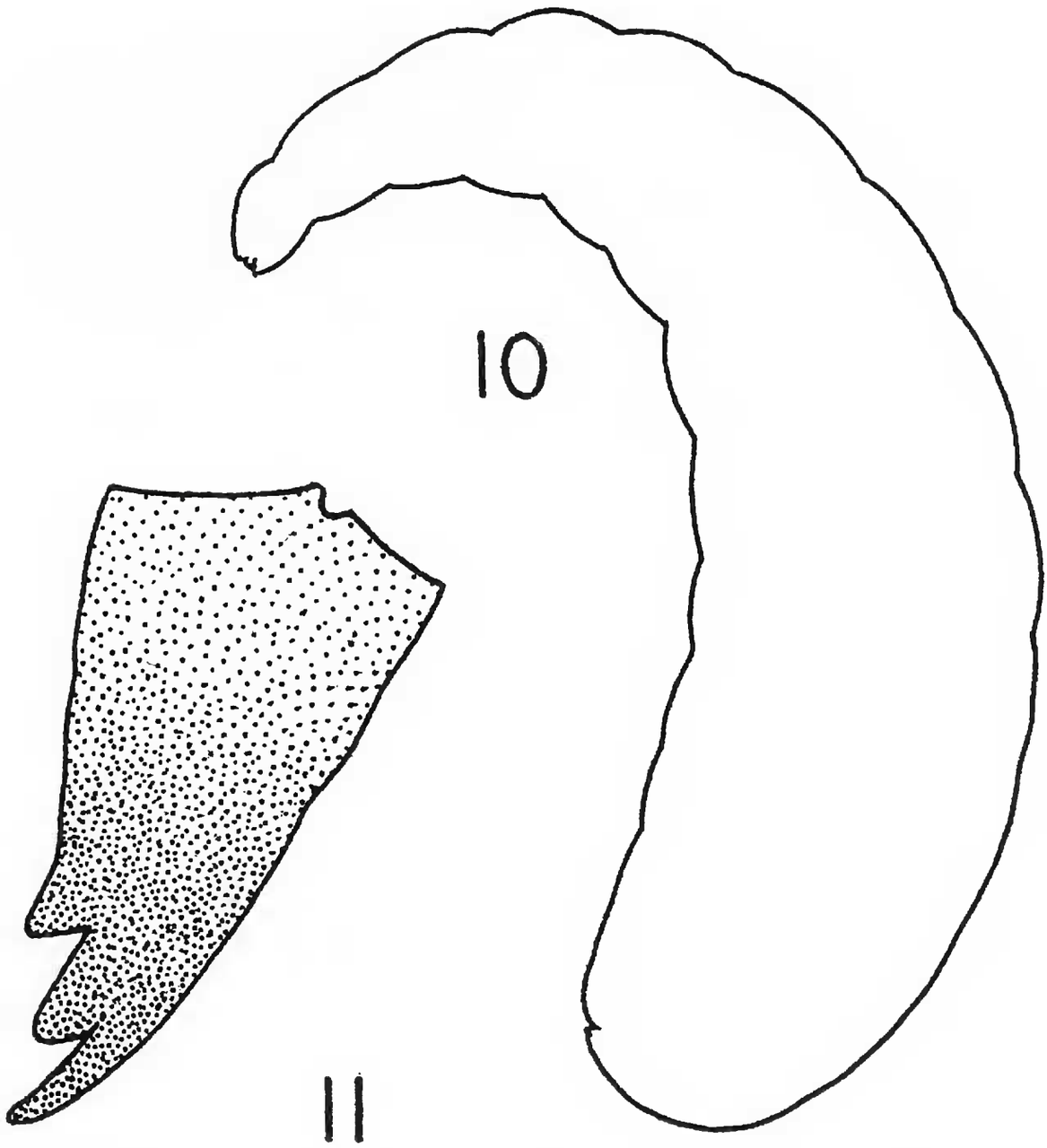


FIG. 10. Myrmeciiform body profile. FIG. 11. Myrmeciiform mandible shape.

tributed; (2) long (0.2–0.3 mm long), a few on each somite. Head hairs longer (0.015–0.075 mm long), tip notably slender. Mandibles with teeth much larger and round-pointed; fewer spinules. Each maxillary palp with four apical and one lateral sensilla; galeae digitiform. Labium with smaller spinules; each palp a slight elevation bearing five sensilla. (Material studied: one semipupa from Western Australia.)

DISCUSSION

In our study of the larvae of the subfamily Myrmicinae (1960) we discussed the importance of various characters in taxonomy and described our techniques for generalizing about body profile and mandible

shape. We later (1964) applied the same reasoning and techniques to the larvae of the Ponerinae, which then included *Myrmecia.*

The larva of *Myrmecia* has a myrmeciiform profile, which was figured and described (1964: 458) thus: "Not differentiated into neck and body; elongate and rather slender; diameter diminishing gradually from the fifth abdominal somite to the anterior end; anterior half strongly curved." It is refigured here (Fig. 10). The mandible shape which is also termed myrmeciiform is revised to read thus: "Subtriangular in anterior view; straight and stout; without a medial blade; with one apical tooth and two subapical medial teeth" (Fig. 11). As the term myrmeciiform suggests, the profile and mandible shape are both distinctive for this genus.

We have selected the myrmeciiform profile as the least specialized among known ant larvae, because (1) *Myrmecia* has generally been considered one of the least specialized genera of ants; (2) among the larvae of this genus no character shows an extreme deviation from the average for all known ant larvae; (3) no character shows adaptation to any limited function or habit; (4) among the larvae of *Myrmecia* the majority of characters are only moderately developed in contrast to the extremes of the same characters in the family.

We believe that the larvae of *Myrmecia* are unspecialized in the following characters: body shape; body hairs; head hairs; size, shape and position of antennae; size and shape of labrum; mandible shape; maxillary palps paxilliform; galeae digitiform; labial palps low rounded elevations; opening of sericteries wide and salient; hypopharynx without spinules; spinules on other mouth parts few, coarse and isolated.

Literature Cited

Brown, W. L. 1954. Remarks on the internal phylogeny and subfamily classification of the family Formicidae. Insectes Soc., 1: 21–31.

Brown, W. L., and R. W. Taylor. 1970. Superfamily Formicoidea. Pages 951–959 *in* "The Insects of Australia." Melbourne Univ. Press, 1029 p.

Clark, J. 1951. The Formicidae of Australia. Vol. I. Subfamily Myrmeciinae. Commonw. Sci. Ind. Res. Organ. Australia, Melbourne, 230 p.

Emery, C. 1911. Hymenoptera: Fam. Formicidae: Subfam. Ponerinae. Fasc. 118 *in* Wytsman's "Genera Insectorum." 125 p., 3 pl.

Wheeler, G. C., and J. Wheeler. 1952. The ant larvae of the subfamily Ponerinae. Amer. Midland Natur., 48: 111–144, 604–672.

1960. The ant larvae of the subfamily Myrmicinae. Ann. Entomol. Soc. Amer., 53: 98–110.

1964. The ant larvae of the subfamily Ponerinae: supplement. Ann. Entomol. Soc. Amer., 57: 443–462.

Wheeler, W. M. 1922. Keys to the genera and subgenera of ants. Amer. Mus. Natur. Hist. Bull., 45: 631–710.